

crops destroyed; houses were flooded without warning, and people driven into the streets. At Glenn's Run, 4 miles from the city, a house was carried away, drowning five persons. Fulton, 8th, damage to property very great; farms flooded for miles; crops a total loss. Leatherwood, 8th, most of town flooded; bottom lands under water; loss to crops almost incalculable; bridges everywhere carried away. Philadelphia, 8th, several buildings flooded; railroad and other bridges carried away; loss of property very great.

*Water Spouts.*—On Chesapeake Bay, off Hooper's Island, 9th, during the passage of a severe squall, a large spout suddenly descended, and, catching a small schooner near by, completely turned her over. Port Eads, La., 29th, two were observed at 1.20 p. m., over the Gulf to the southeast; they formed under a cumulo-stratus cloud in the shape of a cone; one disappeared before its completion; the other gradually elongated until it reached the water. The upper portion, or cone, was of the same color as the cloud, and the lower portion was of a light gray. It moved to the SSE., and at 1.28 p. m. broke, leaving a ragged edge, which rose to the cloud. Ft. Stevenson, Dakota, 11th, observed about two miles from post before the approach of a terrific hail-storm.

*Cloud Burst.*—Seven Star Springs, Barry Co., Mo., 11th, broke in the hills above the town, the water rushing down, carrying away houses, household goods and animals. Five persons drowned.

*High Tides.*—Coney Island, 10th, unusually high, overflowed the meadows behind the hotels.

## TEMPERATURE OF WATER.

*The temperature of water* as observed in rivers and harbors at Signal Service Stations, with average depth at which observations were taken, is given in the table on the left-hand side of chart No. III. Owing to breakage of instruments, etc., observations are wanting as follows: Cleveland, 1st to 5th and 9th; Indianola, 1st to 22d; San Francisco, 1st to 20th.

## ATMOSPHERIC ELECTRICITY.

*Thunder Storms.*—In the various districts they were reported on the following dates: New England, 4th to 7th, 13th to 15th, 19th to 21st, 23d, 26th, 28th and 29th. Middle Atlantic states, 1st to 10th, 13th, 14th, 16th to 21st and 26th to 30th. South Atlantic states, 1st to 4th, 6th, 8th to 11th, 14th, 17th to 22d, 24th to 30th. Eastern Gulf states, 1st, 2d, 4th, 6th to 12th and 14th to 30th. Western Gulf states, 1st, 2d, 4th, 6th to 10th, 13th, 14th, 16th, 17th, 19th to 27th, 29th 30th. Ohio valley and Tennessee, 1st to 9th, 13th to 21st, 23d, 25th to 30th. Lower Lake region, 1st, 2d, 6th to 8th, 12th, 13th, 15th to 17th, 20th, 25th, 27th, 28th. Upper Lake region, 1st to 3d, 5th to 8th, 11th to 13th, 16th, 18th to 20th. Extreme Northwest, 5th to 13th, 15th, 16th, 19th, 26th, 27th. Upper Mississippi valley, 1st, 2d, 4th to 8th, 10th to 21st, 23d, 24th, 26th to 30th. Missouri valley, 1st to 12th, 14th, 15th, 17th, 19th to 30th. Northern Slope, 1st to 15th, 18th to 25th, 28th. Middle Slope, 1st to 12th, 14th, 17th, 19th, 21st to 30th. Southern Slope, 1st, 2d, 5th to 12th, 25th to 27th, 29th. Rio Grande valley, 6th, 8th, 20th, 26th, 29th. Southern Plateau, 3d, 5th, 14th to 16th, 18th, 24th. Middle Plateau, 4th, 10th, 13th. Northern Plateau, 1st to 3d, 7th to 10th, 13th, 14th, 18th to 20th, 23d, 28th. North Pacific coast region, 8th. California, 2d, 3d, 5th, 6th, 14th.

The following items of interest connected with the peculiar manifestations of electricity during the progress of thunder storms were obtained from various sources: Williamsbridge, Westchester Co., N. Y., 14th, at telegraph office, where 116 wires centre, the electric current was so powerful that it drove everyone out of the rooms. The switch boards were covered with one sheet of fire; large balls of electricity leaped from the instruments and shot out from the pins and plugs at the end of the wires. The manager of the office was knocked down as he approached the switch board. In the vicinity of the town two boys were instantly killed as they took shelter from the storm under a large tree. Not a mark or bruise except a black spot on the left leg of one of them was found upon their bodies. The lightning followed down the trunk in a serpentine manner, boring a ragged hole in the ground near the roots. Wakefield, N. Y., 14th, house demolished, prostrating the inmates and killing a horse standing in the street. One of the inmates was thrown violently to the floor, and had a hole about the size of a saucer burned in her dress. Rockport, Ind., 24th, two laborers having driven a reaping machine under a tree, were struck, one of them instantly killed, while the other had his pantaloons legs ripped open and his shoes torn off, but no further injury. Arcola, N. J., 14th, ice-houses fired and destroyed; one laborer was struck and thrown 40 feet. Elizabeth, N. J., 14th, while two persons were fishing in a sail boat upon Newark Bay one of them was killed instantly, leaving the other uninjured. His clothing was stripped from him and his left boot ripped open as if it had been cut with a knife. The lightning after leaving the body tore a large hole in the bottom of the boat. Anne Arundel Co., Md., 10th, a barn containing 15 or 20 people was struck, killing four persons and severely injuring several others. Two of the victims were fearfully burned, while the others showed only a purple scar where struck. Reistertown, Md., 10th, a young man killed while working in the field, his companion standing very close to him was only knocked down, but with no resulting injury. Henrietta, Tex., 9th, two ladies instantly killed while riding along in a carriage. Peoria, Ill., 11th, a farmer while crossing the iron bridge over Kickapoo river was instantly killed; his son close beside him was not injured. Hunnewell, Kan., 12th, a farmer instantly killed

while unsaddling his horse in the barn. His clothes were completely torn from his body, his watch-chain melted, and his face and body badly mangled. The horse was killed and one end of the barn torn out. Clinton Valley, Ohio, 20th, boy instantly killed while riding horseback. His body bore no marks, but the horse on which he rode was torn to pieces. Jamaica, N. Y., 23d, a young girl while seated under a tree was struck and knocked a distance of 10 feet, but not seriously injured; three other persons near by were fatally injured. Detroit, Mich., 16th, house struck, blackening the walls and tearing off picture moldings. At the Marine Hospital a forty-foot flag-staff situated on the roof was shattered to within 20 feet of the base, where the electric current was conducted down the iron braces, making two small sharply cut holes in the corrugated iron roof. Ohio, 16th, the most destructive electric storm ever known was experienced throughout central and northwestern portion of the state. Dubuque, Iowa, 18th, a man while seeking shelter in a ice-house was struck, the lightning scorching one of his legs severely and tearing off his shoe and stocking. A brakeman leading two dogs within the yard of the Illinois Central Railroad Company had both of them killed while he escaped the slightest injury. At the Norwegian Plow Works the lightning made such a terrific display as to drive all of the employees out of the buildings. At the Illinois Central Freight Office, balls of fire were constantly shooting from the telephones. Wauwatosa, Milwaukee Co., Wis., 16th, during a light rain the lightning descended the chimney of a house, killing one of the occupants. The room in which the person was killed had the plastering torn from the walls; a heavy bedstead was jerked into the middle of the room, shattered into long pieces and set on fire. A stove was smashed to atoms, and crocks, pins and other wares were broken and twisted into all kinds of shapes. The other rooms of the house were not in the least affected, and six children sleeping in the main part were undisturbed.

*Atmospheric Electricity Interfering with Telegraphic Communication.*—Ft. Sill, 6th, 7th, 9th; Jacksboro', 7th, 9th; Stockton, 1st, 5th, 6th, 8th, 26th, 27th; Decatur, 9th.

*Auroras.*—There were no unusually brilliant displays during the month, and no continuous observations on a single date embracing a considerable extent of territory. The following stations reported on various dates: Portland, Me., 5th, 10.30 p. m.; Burlington, Vt., 5th, 9.30 p. m.; Woodstock, Vt., 5th, 6th; Springfield, Mass., 29th, 9 p. m.; Ithaca, N. Y., 4th, early part of evening; Rochester, 4th, 9 p. m.; Detroit, 6th, 1.30 a. m.; Alpena, 9th, 8 p. m.; New Corydon, Ind., 17th, 10 p. m., small extension; Marquette, 5th, 9.15 a. m., 7th, early morning; Dubuque, 13th, 8.40 to 9.22 p. m., 20th, 8.30 to 9.11 p. m., 25th, 8.40 p. m.; St. Vincent, 30th, 12.45 a. m.; Clear Creek, Nebr., 16th, 17th, 21st, very faint.

*Zodiacal Light.*—Cleveland, 28th; Nashville, 14th to 19th, 22d to 24th, 27th, 29th; New Haven, 15th; Monticello, Ia., 3d, 17th.

## OPTICAL PHENOMENA.

*Lunar halos* have been observed in the various districts on the following dates: New England, 9th, 11th; Middle Atlantic states, 2d, 7th to 10th, 15th; South Atlantic states, 1st, 5th, 7th to 9th; East Gulf states, 3d, 6th, 8th to 10th; Texas, 1st to 8th, 10th, 24th; Ohio valley and Tennessee, 6th to 13th, 16th, 18th, 19th, 24th; Lower Lake region, 11th, 24th, 30th; Upper Lake region, 4th, 6th to 9th, 15th, 18th, 19th, 20th, 21st; Upper Mississippi valley, 4th, 9th, 10th, 11th, 14th; Missouri valley, 3d, 16th; Northern Plateau, 6th, 13th; Middle Plateau, 10th, 11th; Southern Plateau, 5th, 9th; Middle Pacific coast region, 9th, 11th.

*Solar halos* have been observed in the various districts on the following dates: New England, 3d, 7th, 9th, 10th, 14th, 16th, 19th, 24th, 26th; Middle Atlantic states, 25th; South Atlantic states, 2d; Ohio valley and Tennessee, 1st, 10th, 12th, 13th, 15th, 16th, 18th, 19th, 21st to 30th; Lower Lake region, 6th, 25th; Upper Lake region, 6th to 9th, 11th, 15th, 20th, 29th; Upper Mississippi valley, 2d, 5th, 9th, 17th, 18th, 21st to 24th, 28th, 29th; Missouri valley, 5th; Eastern Slope, 9th, 10th, 20th, 25th; Texas, 5th; Northern Plateau, 2d, 6th, 14th, 16th, 10th, 22d, 24th, 25th; North Pacific coast region, 1st, 2d, 16th, 23d, 25th, 29th; Middle Pacific coast region, 2d, 5th, 11th to 14th, 23d, 25th.

*Polar Bands.*—Portland, Or., 16th, 18th, 29th; Rio Vista, Cal., 2d, 19th, 27th; New Corydon, Ind., 11th; Guttenburg, Ia., 5th; Fayette, Miss., 26th; Freehold, N. J., 5th, 19th.

*Mirage.*—Indianola, 23d, 24th; Cape May, 28th, appeared in the southern horizon from 3 to 6 p. m.

## MISCELLANEOUS PHENOMENA.

*Meteors.*—Umatilla, 2d. Boise City, 17th, 21st. Ft. Missoula, 24th. Ft. Apache, 20th. Bismarck, 23d. St. Vincent, 30th; very brilliant, starting from near the head of "Hercules" and fell slowly to the earth; was of a greenish color, and its brightness so great that the whole sky seemed darkened when it disappeared. Denison, 23d, 26th. Decatur, 4th. Corsicana, 16th, 19th: that of latter date was very brilliant; appeared about 70° above horizon and pursued a northwesterly course, its path being about 25° in length; it left a bright trail, lasting several seconds. Mobile, 27th. Davenport, 2d, 27th. Cairo, 24th. Milwaukee, 21st; brilliant; from southeasterly part of heavens; it left a long luminous track in its course toward the pointers in "Ursa Major." Cleveland, 24th, 29th. Detroit, 12th; several observed. Ocean City, Md., 25th. Bangor, Me., 7th, 10 p. m.; large; seemed to fall directly to the earth. Mt. Wash-